

CLAIMS

1. An organic electroluminescent device having at least one organic layer containing a light-emitting layer between a pair of electrodes,

wherein the organic electroluminescent device contains a compound emitting fluorescence at a time that voltage is applied, and a light emission at the time that voltage is applied is mainly derived from a light emission from the fluorescent compound, and

an external quantum efficiency of the device is 6% or more.

2. The organic electroluminescent device according to claim 1, wherein an internal quantum efficiency of the organic electroluminescent device is 30% or more.

3. The organic electroluminescent device according to claim 1 or 2, wherein the organic electroluminescent device contains an amplifying agent performing a function of amplifying a number of singlet excitons generated at the time that voltage is applied, thus amplifying an intensity of the light emission.

4. The organic electroluminescent device according to any one of claims 1 to 3, wherein a maximum light-emitting wavelength from the compound emitting fluorescence is 580 nm or less.

5. The organic electroluminescent device according to any one of claims 1 to 4, wherein a light-emitting layer contains at least one host material, and the host material is a complex.

6. The organic electroluminescent device according to any one of

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claims 1 to 5, wherein the compound emitting fluorescence is a fused aromatic compound.

7. The organic electroluminescent device according to any one of claims 1 to 6, wherein the organic electroluminescent device has an electron-transporting layer, and the electron-transporting layer contains a non-complex compound.

8. The organic electroluminescent device according to any one of claims 3 to 7, wherein the amplifying agent is a transition metal complex.

9. The organic electroluminescent device according to any one of claims 3 to 8, wherein a concentration of the amplifying agent contained in the light-emitting layer is 9 weight % or less.

10. The organic electroluminescent device according to any one of claims 3 to 9, wherein a difference between the maximum light-emitting wavelength of the compound emitting fluorescence at the time that voltage is applied, and a maximum light-emitting wavelength of the amplifying agent, is 70 nm or less.

11. The organic electroluminescent device according to any one of claims 3 to 10, wherein a difference between the maximum light-emitting wavelength of the amplifying agent, and an absorption maximum wavelength of the compound emitting fluorescence at the time that voltage is applied, is -20 nm or more.

12. The organic electroluminescent device according to any one of claims 1 to 11, wherein the organic electroluminescent device has a hole-transporting layer, the light-emitting layer and the electron-transporting layer, and a light emission from the compound emitting

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fluorescence is 80% or more of a total light emission obtained from the organic electroluminescent device.

13. The organic electroluminescent device according to any one of claims 1 to 12, wherein the organic electroluminescent device has the hole-transporting layer, the light-emitting layer and the electron-transporting layer, and has neither a hole blocking layer nor an exciton blocking layer between the light-emitting layer and the electron-transporting layer.

14. The organic electroluminescent device according to any one of claims 3 to 13, wherein the organic electroluminescent device has the hole-transporting layer, the light-emitting layer and the electron-transporting layer, and the light-emitting layer has at least one alternately laminated structure including a layer containing at least one compound emitting fluorescence at a time that voltage is applied and a layer containing at least one amplifying agent.

15. The organic electroluminescent device according to claim 14, wherein the light-emitting layer has an alternately laminated structure of ten or more layers.